

AMENDMENTS TO THE CLAIMS:

Claims 74-76, 92-94, 123, 124, 127-133 and 135-139 are pending. Claim 127 is amended herein. This listing of claims will replace all prior versions, and listings of claims, in the application.

LISTING OF CLAIMS:

Claims 1-73 (Cancelled).

74. (Previously presented) An array of nucleic acid probes, wherein each probe comprises:

- a single-stranded first nucleic acid of about 15-25 nucleotides in length;
- a longer single-stranded second nucleic acid of about 20-30 nucleotides in length, comprising a nucleotide sequence complementary to the first nucleic acid and a random terminal nucleotide sequence of between 3-10 nucleotides in length; and
- an oligonucleotide of 4-20 nucleotides in length, comprising a random nucleotide sequence, wherein:

the first nucleic acid is hybridized to the second nucleic acid to form a hybrid having a double-stranded portion and a single-stranded portion comprising the random terminal nucleotide sequence of between 3-10 nucleotides in length; and

the oligonucleotide is ligated to the random nucleotide sequence of the second nucleic acid.

75. (Previously presented) The array of claim 74, wherein the nucleic acids in the array are fixed to a solid support selected from the group consisting of plastics, ceramics, metals, resins, gels, membranes, and chips.

76. (Previously presented) The array of claim 75, wherein the solid support is a two-dimensional or a three-dimensional matrix with multiple probe binding sites.

Claims 77-91 (Cancelled).

92. (Previously presented) The array of claim 74, wherein the probes are labelled with a detectable label.

93. (Previously presented) The array of claim 92, wherein the detectable label is selected from the group consisting of radioisotope, a stable isotope, an enzyme, an antibody, a fluorescent chemical, a luminescent chemical, a chromatic chemical, and a metal.

94. (Previously presented) The array of claim 74, wherein the nucleic acids are DNA, RNA, Protein Nucleic Acid (PNA), or a combination thereof.

Claims 95-122 are cancelled.

123. (Previously presented) The array of claim 74, wherein the probes are fixed to a solid support by conjugating to a coupling agent selected from the group consisting of antibody/antigen, biotin/streptavidin, *Staphylococcus aureus* protein A/IgG antibody F_c fragment, nucleic acid/nucleic acid binding protein, and streptavidin/protein A chimeras.

124. (Previously presented) The array of claim 74, wherein the random region is of length R and the array comprises about 4^R different nucleic acid probes.

Claims 125 and 126 are cancelled.

127. (Currently amended) An array of nucleic acid probes, wherein each probe comprises a single-stranded portion at one terminus, a double-stranded portion at the opposite terminus, and a variable nucleotide sequence within the single-stranded portion, wherein:

the probes are divided into four subsets; and ~~, wherein:~~

for each subset, a selected nucleotide base of the four bases of the nucleic acid occupies a defined number of positions in each probe and all other nucleotide bases except the selected nucleotide base occupy the remaining positions. ~~, wherein the selected nucleotide base is adenosine 5'-phosphate, deoxyadenosine 5'-phosphate, deoxythymidine 5'-phosphate, uridine 5'-phosphate, guanine 5'-phosphate, deoxyguanosine 5'-phosphate, cytidine 5'-phosphate or deoxycytidine 5'-phosphate.~~

128. (Previously presented) The array of claim 138, wherein the coupling agent is selected from the group consisting of antibody/antigen, biotin/streptavidin, *Staphylococcus aureus* protein A/IgG antibody F_c fragment, nucleic acid/nucleic acid binding protein, and streptavidin/protein A chimeras.

129. (Previously presented) The array of claim 127, wherein the probes are labelled with a detectable label.

130. (Previously presented) The array of claim 129, wherein the detectable label is selected from the group consisting of a radioisotope, a stable isotope, an enzyme, an antibody, a fluorescent chemical, a luminescent chemical, a chromatic chemical, and a metal.

131. (Previously presented) The array of claim 127, wherein the nucleic acids are DNA, RNA, Protein Nucleic Acid (PNA), or a combination thereof.

132. (Previously presented) The array of claim 139, wherein the solid support is selected from the group consisting of plastics, ceramics, metals, resins, gels, membranes, and chips.

133. (Previously presented) The array of claim 139, wherein the solid support is a two-dimensional or a three-dimensional matrix with multiple probe binding sites.

134. (Cancelled)

135. (Previously presented) The array of claim 127, wherein the probes comprise a base analog.

136. (Previously presented) The array of claim 74, wherein the double-stranded portion of each probe includes an enzyme recognition site.

137. (Previously presented) The array of claim 127, wherein the nucleic acids in the array are fixed to a solid support.

138. (Previously presented) The array of claim 127, wherein the probes are fixed to a solid support by conjugating to a coupling agent.

139. (Previously presented) The array of claim 127, wherein the probes of the array are fixed to a solid support.